

**AMENDMENTS TO THE CLAIMS**

**This listing of claims will replace all prior versions and listings of claims in the application:**

**LISTING OF CLAIMS:**

1. (original): A boron phosphide-based semiconductor light-emitting device, comprising:

a crystalline substrate;

a first semiconductor formed on said crystalline substrate, said first semiconductor layer including a light-emitting layer, serving as a base layer and having a first region and a second region different from the first region;

a boron phosphide-based semiconductor amorphous layer formed on said first region of said first semiconductor layer, said boron phosphide-based semiconductor amorphous layer including a high-resistance boron phosphide-based semiconductor amorphous layer;

a pad electrode formed on said high-resistance boron phosphide-based semiconductor amorphous layer for establishing wire bonding; and

a conductive boron phosphide-based crystalline layer formed on said second region of said first semiconductor layer, said conductive boron phosphide-based crystalline layer extending optionally to a portion of said boron phosphide-based semiconductor amorphous layer,

wherein said pad electrode is in contact with said boron phosphide-based semiconductor crystalline layer at a portion of said pad electrode above the bottom of said pad electrode.

2. (original): A boron phosphide-based semiconductor light-emitting device, comprising:

a crystalline substrate;

a first semiconductor layer formed on said crystalline substrate, said first semiconductor layer including a light-emitting layer, serving as a base layer and having a first region and a second region different from said first region;

a boron phosphide-based semiconductor amorphous layer formed on said first region of said first semiconductor layer, said boron phosphide-based semiconductor amorphous layer including a first boron phosphide-based semiconductor amorphous layer having a conduction type opposite to that of said first semiconductor layer;

a pad electrode formed on said first boron phosphide-based semiconductor amorphous layer, for establishing wire bonding; and

a conductive boron phosphide-based crystalline layer formed on said second region of said first semiconductor layer, said conductive boron phosphide-based crystalline layer extending optionally to a portion of said boron phosphide-based semiconductor amorphous layer,

wherein said pad electrode is in contact with said boron phosphide-based semiconductor crystalline layer at a portion of said pad electrode above the bottom of said pad electrode.

3. (currently amended): A boron phosphide-based semiconductor light-emitting device as set forth~~for the~~ in claim 1,~~claim 1 or 2~~, wherein said boron phosphide-based semiconductor amorphous layer has a multilayer structure formed from a boron phosphide-based semiconductor amorphous layer which is formed so as to attain contact with said first semiconductor layer and which is of a conduction type opposite to that of said first semiconductor layer, and a high-resistance boron phosphide-based semiconductor amorphous layer formed on said boron phosphide-based semiconductor amorphous layer having said opposite conduction type.

4. (currently amended): A boron phosphide-based semiconductor light-emitting device as set forth in claim 1,~~any one of claims 1 to 3~~, wherein said boron phosphide-based semiconductor amorphous layer is formed of an undoped boron phosphide-based semiconductor.

5. (original): A boron phosphide-based semiconductor light-emitting device as set forth in claim 3, wherein the two boron phosphide-based semiconductor amorphous layers constituting the multilayer structure of said boron phosphide-based semiconductor amorphous layer are formed of an undoped boron phosphide-based semiconductor.

6. (currently amended): A boron phosphide-based semiconductor light-emitting device as set forth in claim 1, ~~any one of claims 1 to 5~~, wherein said portion of the pad electrode in contact with said conductive boron phosphide-based semiconductor crystalline layer is formed of a material able to form an Ohmic contact with the conductive boron phosphide-based crystalline layer.

7. (original): A boron phosphide-based semiconductor light-emitting device as set forth in claim 6, wherein said portion of the pad electrode formed of a material able to form Ohmic contact with the conductive boron phosphide-based crystalline layer extends onto said conductive boron phosphide-based semiconductor crystalline layer.

8. (currently amended): A boron phosphide-based semiconductor light-emitting device as set forth in claim 6, ~~claim 6 or 7~~, wherein said pad electrode has a bottom portion formed of a material able to form non-Ohmic contact with said boron phosphide-based semiconductor amorphous layer.

9. (currently amended): A boron phosphide-based semiconductor light-emitting device as set ~~forth for the~~ in claim 1, ~~any one of claims 1 to 8~~, wherein said pad electrode has a bottom portion provided on said boron phosphide-based semiconductor amorphous layer, and an

Ohmic electrode portion which is provided on the bottom portion and which has a center coincident with that of the plane shape of the bottom portion.

10. (original): A boron phosphide-based semiconductor light-emitting device as set forth in claim 9, wherein said Ohmic electrode portion of said pad electrode has a planar area greater than that of the bottom portion of said pad electrode.

11. (original): A boron phosphide-based semiconductor light-emitting device as set forth in claim 10, wherein said Ohmic electrode portion of said pad electrode extends onto a surface of said conductive boron phosphide-based semiconductor crystalline layer.

12. (currently amended): A boron phosphide-based semiconductor light-emitting device as set forth in claim 1, ~~any one of claims 1 and 3 to 11~~, wherein said high-resistance boron phosphide-based semiconductor amorphous layer has a resistivity of  $10\ \Omega\cdot\text{cm}$  or more.

13. (original): A boron phosphide-based semiconductor light-emitting device as set forth in claim 12, wherein said high-resistance boron phosphide-based semiconductor amorphous layer has a resistivity of  $100\ \Omega\cdot\text{cm}$  or more.

14. (currently amended): A boron phosphide-based semiconductor light-emitting device as set forth in claim 1, ~~any one of claims 1 to 13~~, wherein said boron phosphide-based

$< 1, 0 \leq \gamma < 1, 0 < \alpha + \beta + \gamma \leq 1, 0 \leq \delta < 1$ ) and  $B_{\alpha}Al_{\beta}Ga_{\gamma}In_{1-\alpha-\beta-\gamma}P_{1-\delta}N_{\delta}$  ( $0 < \alpha \leq 1, 0 \leq \beta < 1, 0 \leq \gamma < 1, 0 < \alpha + \beta + \gamma \leq 1, 0 \leq \delta < 1$ ).

15. (currently amended): A boron phosphide-based semiconductor light-emitting device as set forth in claim 1, ~~any one of claims 1 to 13~~, wherein said boron phosphide-based semiconductor is selected from the group consisting of boron monophosphide (BP), boron gallium indium phosphide (compositional formula:  $B_{\alpha}Ga_{\gamma}In_{1-\alpha-\gamma}P$ :  $0 < \alpha \leq 1, 0 \leq \gamma < 1$ ), or a mixed-crystal compound of boron nitride phosphide (compositional formula:  $BP_{1-\delta}N_{\delta}$ :  $0 \leq \delta < 1$ ) or boron arsenide phosphide (compositional formula:  $B_{\alpha}P_{1-\delta}As_{\delta}$ :  $0 \leq \delta < 1$ ).

16. (original): A boron phosphide-based semiconductor light-emitting device as set forth in claim 6, wherein said conductive boron phosphide-based crystalline layer is a p-type conductivity layer and said portion of said pad electrode in contact with said conductive boron phosphide-based crystalline layer is selected from the group consisting of Au-Zn and Au-Be.

17. (original): A boron phosphide-based semiconductor light-emitting device as set forth in claim 6, wherein said conductive boron phosphide-based crystalline layer is an n-type conductivity layer and said portion of said pad electrode in contact with said conductive boron phosphide-based crystalline layer is selected from the group consisting of Au-Ge, Au-Sn and Au-In.

18. (original): A boron phosphide-based semiconductor light-emitting device as set forth in claim 8, wherein said boron phosphide-based amorphous layer is a p-type conductivity layer and said portion of said pad electrode in contact with said conductive boron phosphide-based crystalline layer is selected from the group consisting of Au-Ge, Au-Sn, Au-In, Ti, Mo, V, Ta, Hf and W.

19. (original): A boron phosphide-based semiconductor light-emitting device as set forth in claim 8, wherein said boron phosphide-based amorphous layer is a p-type conductivity layer and said portion of said pad electrode in contact with said conductive boron phosphide-based crystalline layer is selected from the group consisting of Au-Zn, Au-Be, Au-In, Ti, Mo, V, Ta, Hf and W.

20. (original): A method for producing a boron phosphide-based semiconductor light-emitting device, comprising:

- forming a first semiconductor layer including a light-emitting layer on a crystalline substrate through vapor phase growth;
- depositing, through vapor phase growth employing said first semiconductor layer serving as a base layer at a crystalline substrate temperature falling within a range of 250°C to 1,200°C, a boron phosphide-based semiconductor amorphous layer having high resistance or a boron phosphide-based semiconductor amorphous layer having a conduction type opposite to that of the base layer;

selectively removing said boron phosphide-based semiconductor amorphous layer, thereby causing said boron phosphide-based semiconductor amorphous layer to remain in a first region and exposing said first semiconductor layer in a second region different from the first region;

depositing a conductive boron phosphide-based semiconductor crystalline layer on said exposed first semiconductor layer and said boron phosphide-based semiconductor amorphous layer through vapor phase growth at a crystalline substrate temperature falling within a range of 750°C to 1,200°C;

selectively removing said conductive boron phosphide-based semiconductor crystalline layer in said first region, thereby exposing said boron phosphide-based semiconductor amorphous layer;

forming a pad electrode for establishing wire bonding on said exposed boron phosphide-based semiconductor amorphous layer such that said pad electrode is caused to be in contact with said boron phosphide crystalline layer; and subsequently,

cutting said formed structure, to thereby produce individual light-emitting devices.

21. (original): A method for producing a boron phosphide-based semiconductor light-emitting device as set forth in claim 20, further comprising removing said conductive boron phosphide-based semiconductor crystalline layer present in said first region where said pad electrode is to be provided and simultaneously, removing said conductive boron phosphide-based



semiconductor crystalline layer present in a region where a stripe-like dicing line for cutting and separating said structure into individual light-emitting devices is provided, thereby exposing a surface of the underlying boron phosphide-based semiconductor amorphous layer.